# *Background*

- Children's Environmental Health Protection Act required ARB and OEHHA to review all health-based ambient air quality standards.
  - Protective of susceptible populations including infants and children
  - Adequate Margin of Safety
  - Prioritization of standards for full review

# *Health Protectiveness*

- Extent of evidence of effects at or near the existing ambient air quality standard.
- Nature and severity of effects.
- Magnitude of risk when ambient levels are at or near the level of the existing standard.
- Any evidence that children may be more susceptible than adults.
- The degree of outdoor exposure relative to the level of the standard.

# *Findings for Ozone*

- SB25 review identified clinical and epidemiological studies that demonstrated effects of $O_3$ on pulmonary function, asthma exacerbation and acute morbidity in children and adults at or below the 1-hr CA standard of 0.09 ppm.
- Review indicated need for
  - More stringent standard,
  - Different averaging time, or
  - Both

# *Key Studies*

- Relevant studies ID'd and interpreted?
  - Review was comprehensive but some recent key studies need to be included.
  - Specific recommendations will be provided on a chapter-by-chapter basis.

# *Susceptible Populations*

- Appropriately ID'd?
  - Prolonged periods outdoors doing exertional activities.
    - Children
    - Outdoor workers
    - Athletes
  - Airway allergies
- Other populations that should be considered?
  - COPD and Cardiovascular data are suggestive
    - Too few studies and small subject numbers
- Are data on infants and children appropriately considered?
  - More data needed on *in-utero* exposure and neonates

# *Uncertainties*

- Adequate description?
  - Health Effects
    - Incorporated in discussions
    - Limitations could be better explained
  - Monitoring
    - Measurement precision and relationship to not to be exceeded designation needs to be more clearly described.

# *Exposure Patterns*

- Differences in patterns for susceptible populations are briefly discussed, but could be expanded.
  - Infants
  - Children-especially related to findings of relating asthma and outdoor sports participation
  - Others-outdoor workers, etc.

# *Standard Recommendations*

- Staff Recommendations
  - Retain $O_3$ as indicator for oxidant pollutants
    - The monitoring method does not measure some of the other oxidant gases.
    - Only appropriate if $O_3$ is a good surrogate
    - $O_3$ as the designated pollutant is appropriate given the degree to which controlled exposures are used in the derivation of the standard.
  - 1-hr Average $O_3$ at 0.09 ppm
  - 8-hr Average $O_3$ at 0.070 ppm
  - Not to be exceeded

# *AQAC Concerns*

- Committee is concerned that the proposed standards, although an improvement over current status, can still allow effects in susceptible populations.
  - Chamber studies of 6.6 hr demonstrate effects at 0.08 ppm
  - 8-hr at 0.070 ppm is a higher integrated exposure
  - No study at 0.07 ppm
  - Given the importance of the 6.6 hr studies in the setting of the standard, AQAC would ask for additional justification of the 8-hr standard vs. a 6.6-hr or 6 hr standard
- Benefits chapter suggests significant health as well as monetary benefits.

# *Future Research*

- Monitoring
  - Personal exposure
  - Other oxidant gases
- Health
  - Susceptible populations
  - New indicators of biological response
  - Pulmonary function and links to lung disease

# *AQAC Recommendations*

- Accept staff recommendations to retain the 1-hr standard at 0.09 ppm and institute an 8-hr CA standard at 0.070 ppm.
- Recognize that $O_3$ monitoring method may not measure other oxidant gases and that total oxidant content may be higher.
- $O_3$ studies should receive research support to expand or replicate key findings that could modify our perception of the adequacy of the margin of safety.
  - In utero
  - Neonates
  - Monitoring
- Strongly recommend that additional research be performed and that these standards be revisited in 5 years.